CHAPTER 2

DESCRIPTION OF THE WOLF RIVER WATERSHED

2.1. BACKGROUND. The Wolf River and Watershed are named for the red wolf, which was abundant in Southwest Tennessee when the first settlers arrived. The Chickasaw name, “Blackbird River,” was replaced once French mappers began recording what they saw.

This Chapter describes the location and characteristics of the Tennessee portion of the Wolf River Watershed.

2.2. DESCRIPTION OF THE WATERSHED.

2.2.A. General Location. The Wolf River Watershed is located in Tennessee and Mississippi. The Tennessee portion of the Wolf River Watershed (68.5% of the entire watershed) includes parts of Fayette, Hardeman, and Shelby Counties.

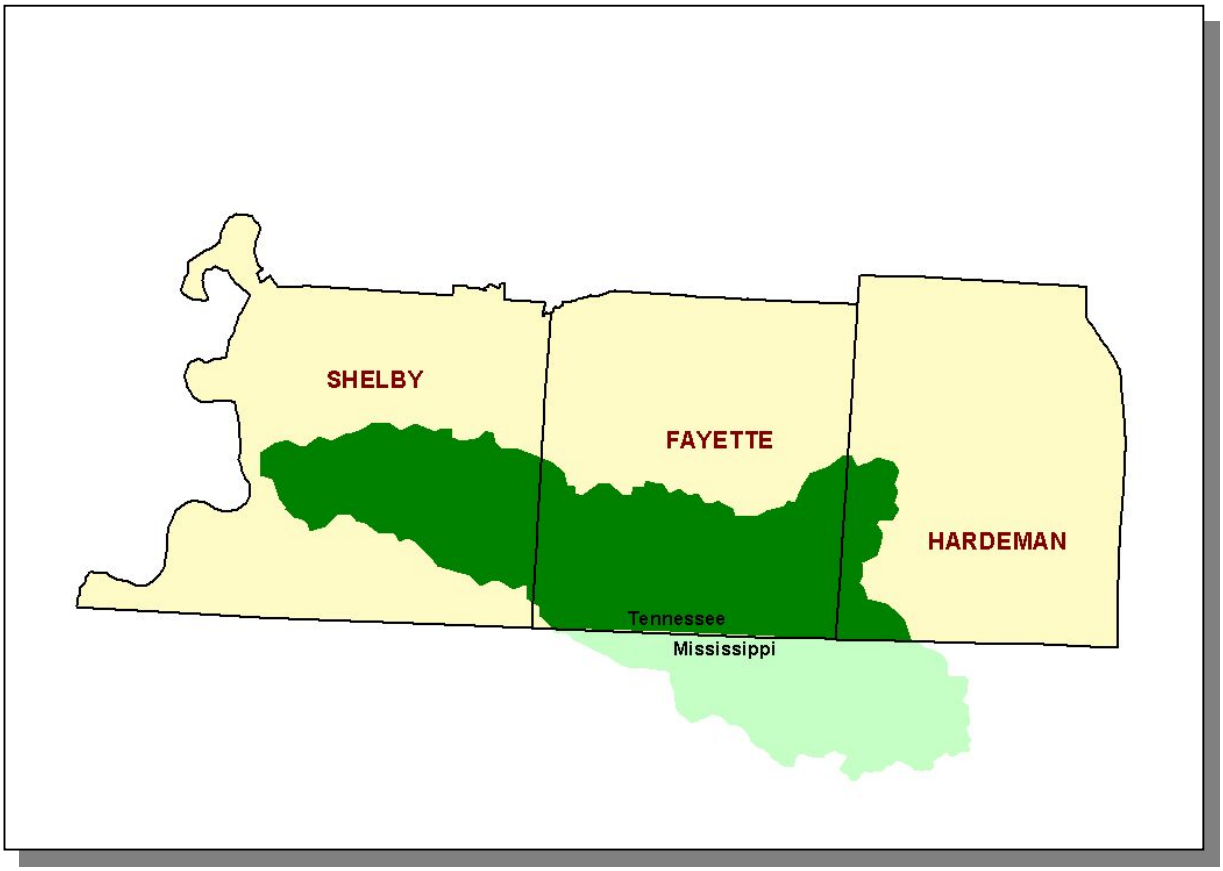

Figure 2-1. General Location of the Tennessee Portion of the Wolf River Watershed. *Dark green, Tennessee portion (561 square miles); light green, Mississippi portion (258 square miles).*

COUNTY	% OF WATERSHED IN EACH COUNTY
Fayette	52.2
Shelby	38.6
Hardeman	9.2

Table 2-1. The Wolf River Watershed Includes Parts of Three West Tennessee Counties. *Percentages are calculated for Tennessee portion of watershed*

2.2.B. Population Density Centers. Five state highways and two interstates serve the major communities in the Tennessee portion of the Wolf River Watershed.

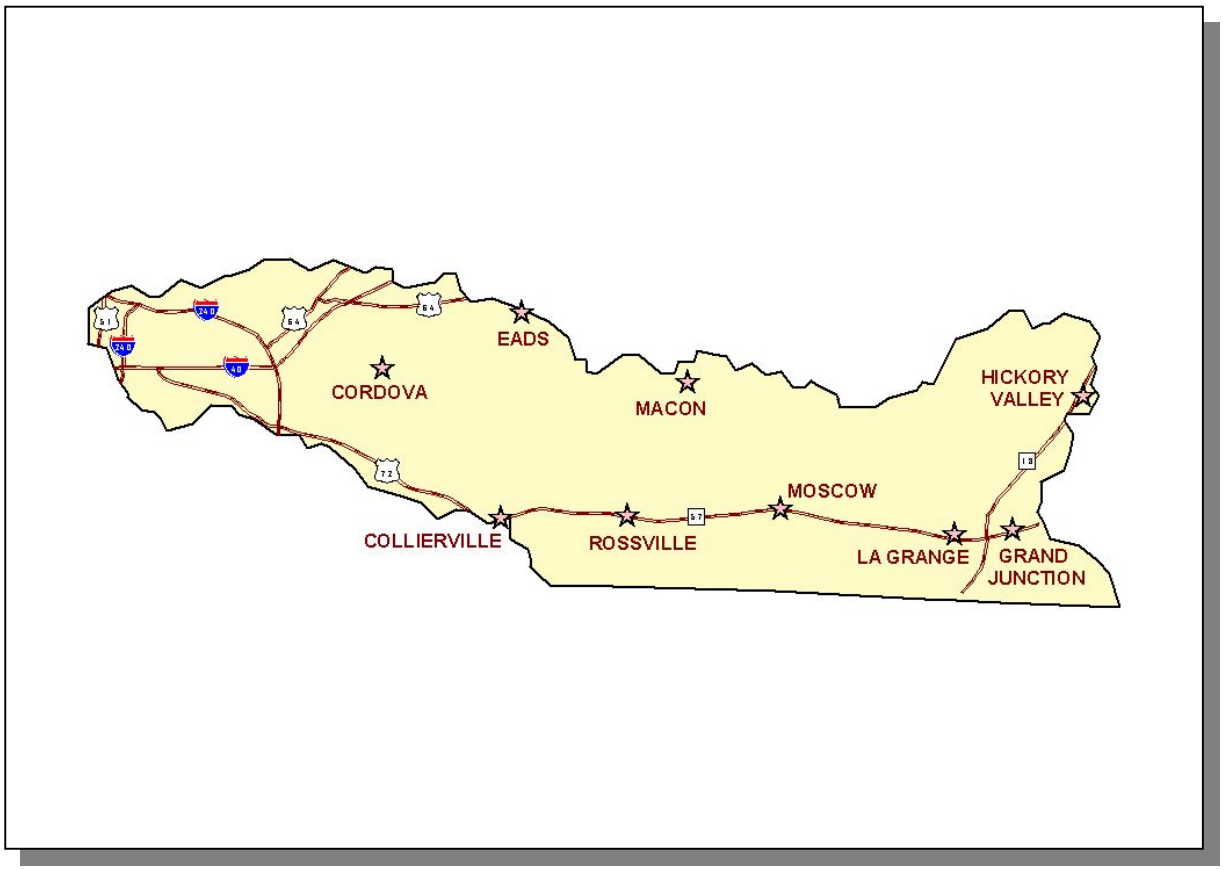

Figure 2-2. Municipalities and Roads in the Tennessee Portion of the Wolf River Watershed.

MUNICIPALITY	POPULATION	COUNTY
Collierville	25,629	Shelby
Moscow	395	Fayette
Rossville	384	Fayette
Grand Junction	356	Fayette/Hardeman
La Grange	162	Fayette
Hickory Valley	160	Hardeman

Table 2-2. Communities and Populations in the Tennessee Portion of the Wolf River Watershed. *Population based on 1999 census (Tennessee 2001/2002 Blue Book).*

2.3. GENERAL HYDROLOGIC DESCRIPTION.

2.3.A. Hydrology. The Wolf River Watershed, designated 08010210 by the USGS, drains approximately 819 square miles, 561 square miles of which are in Tennessee, and empties to the Mississippi River Watershed (08010100).

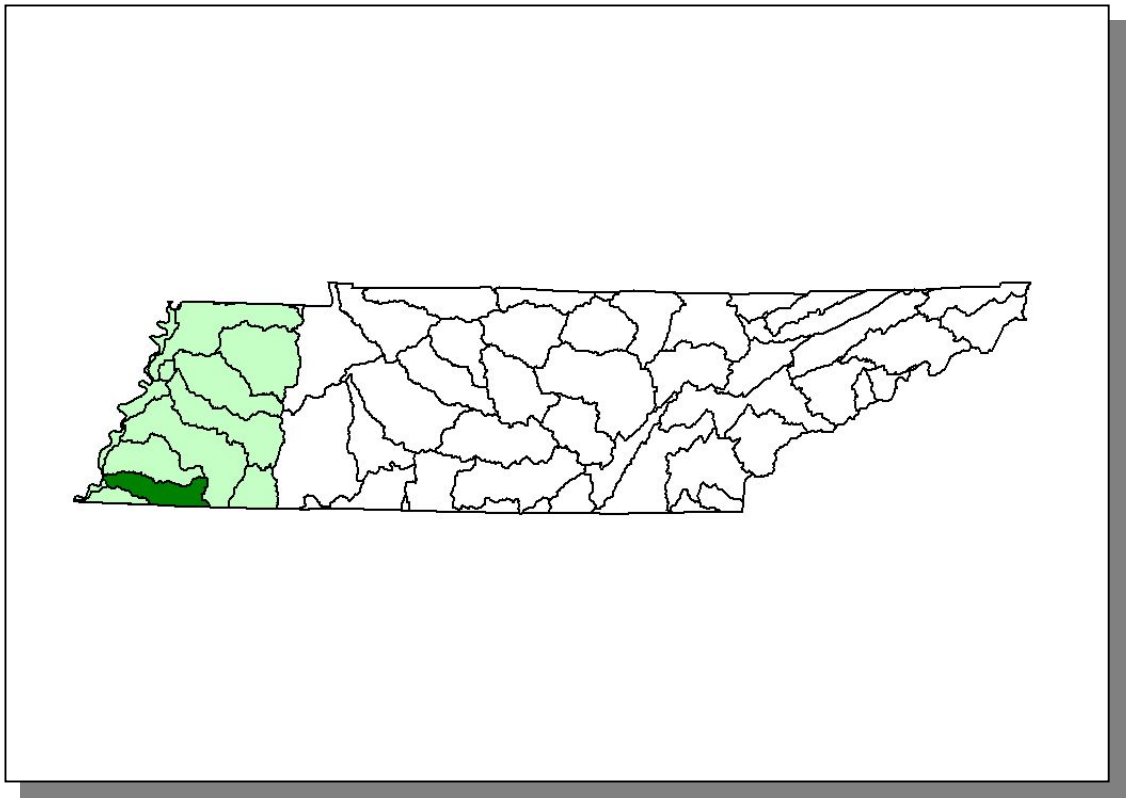

Figure 2-3. The Wolf River Watershed is Part of the Mississippi River Basin.

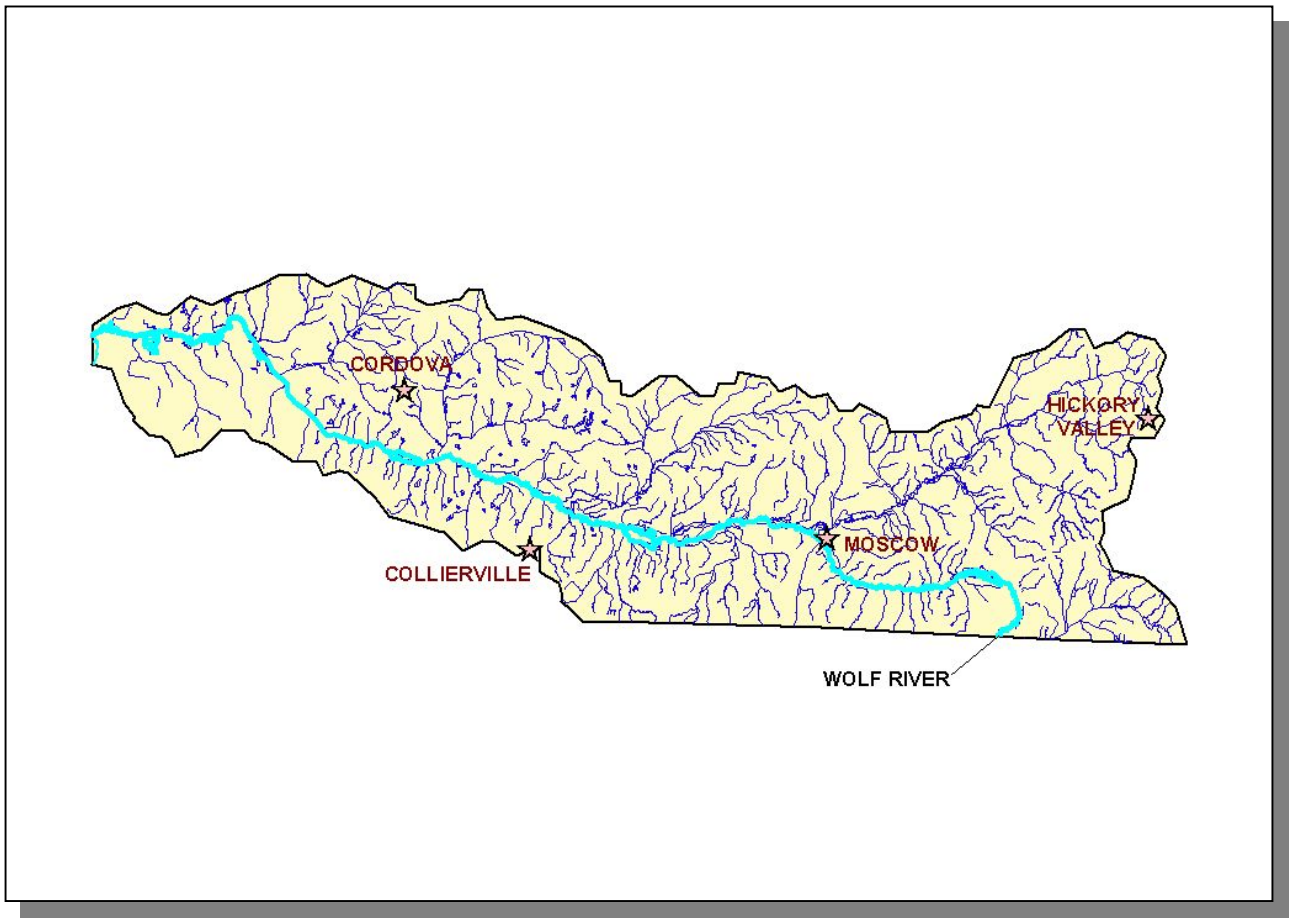

Figure 2-4. Hydrology in the Tennessee Portion of the Wolf River Watershed. *There are 1,025 stream miles in the Tennessee portion of the Wolf River Watershed as catalogued in the assessment database. An additional 407 stream miles are located in the Mississippi portion of the watershed as catalogued in the River Reach File 3 database. 177 lake acres are located in the entire Tennessee portion of the watershed as catalogued in the assessment database. Location of the Wolf River and the cities of Collierville, Cordova, Hickory Valley and Moscow are shown for reference.*

2.3.B. Dams. There are 61 dams inventoried by TDEC Division of Water Supply in the Tennessee Portion of the Wolf River Watershed. These dams either retain 30 acre-feet of water or have structures at least 20 feet high.

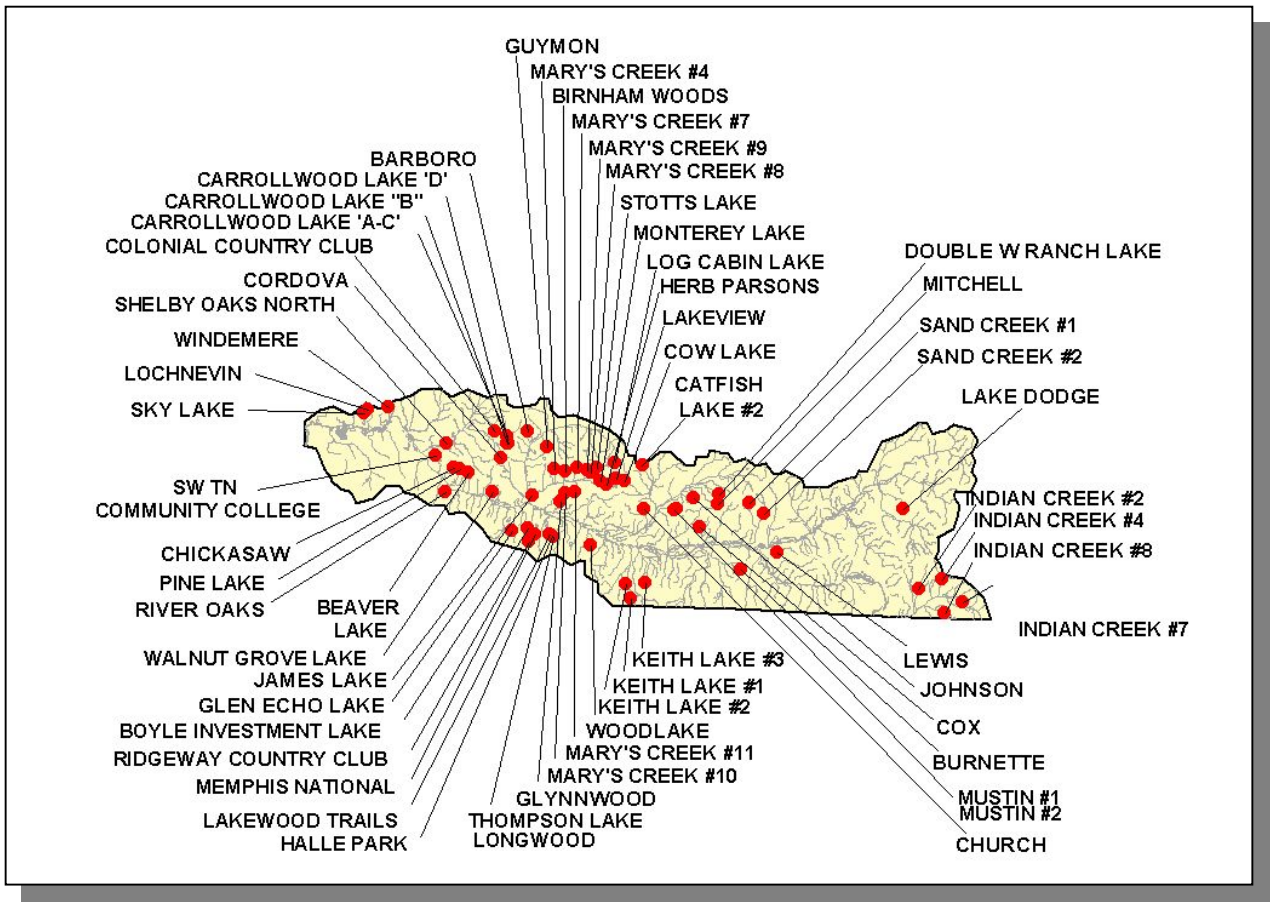

Figure 2-5. Location of Inventoried Dams in the Tennessee Portion of the Wolf River Watershed. *More information is provided in Appendix II and on the TDEC homepage at http://gwidc.memphis.edu/website/dws/.*

2.4. LAND USE. Land Use/Land Cover information was provided by EPA Region 4 and was interpreted from 1992 Multi-Resolution Land Cover (MRLC) satellite imagery.

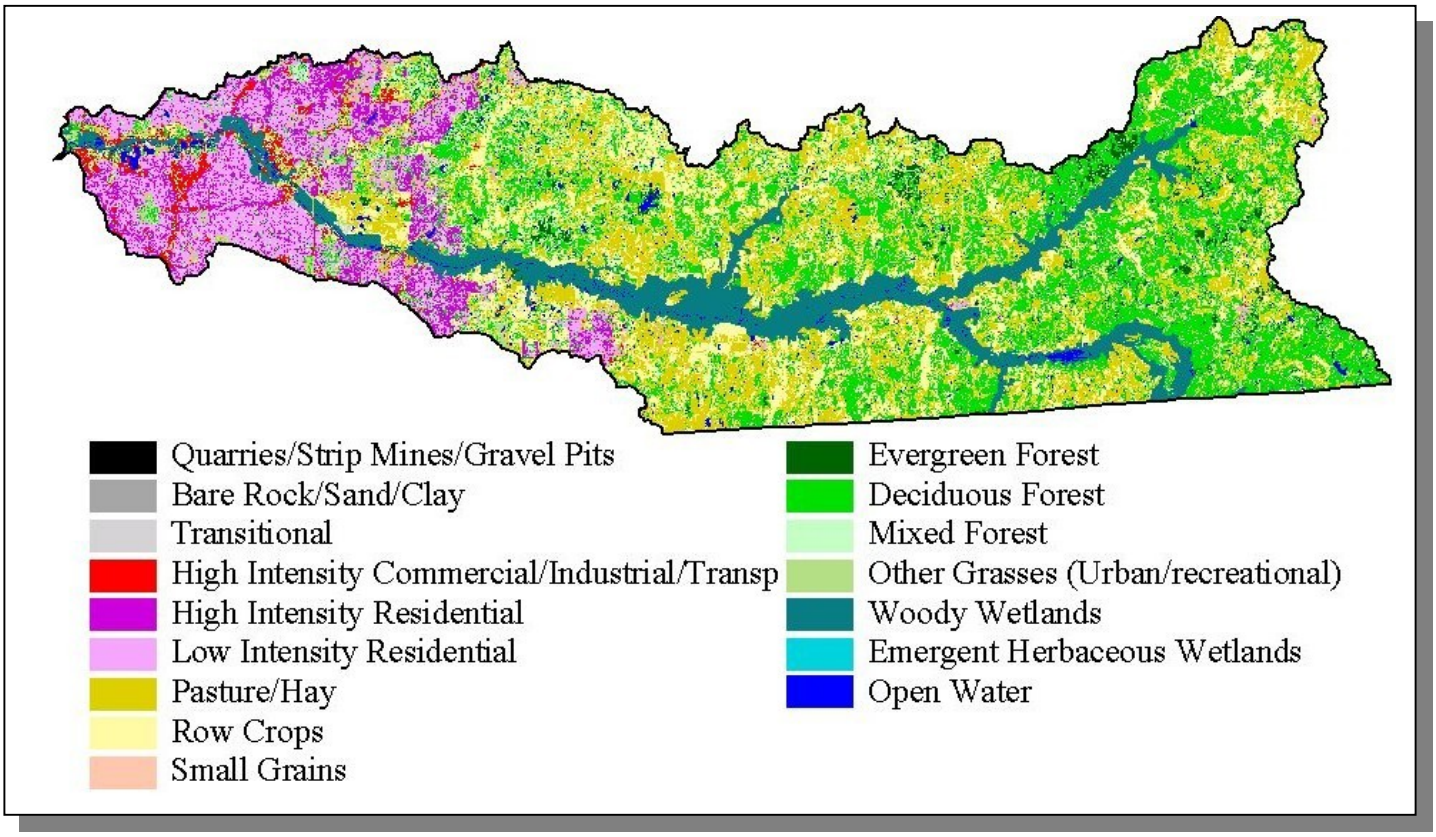

Figure 2-6. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery in the Tennessee Portion of the Wolf River Watershed.

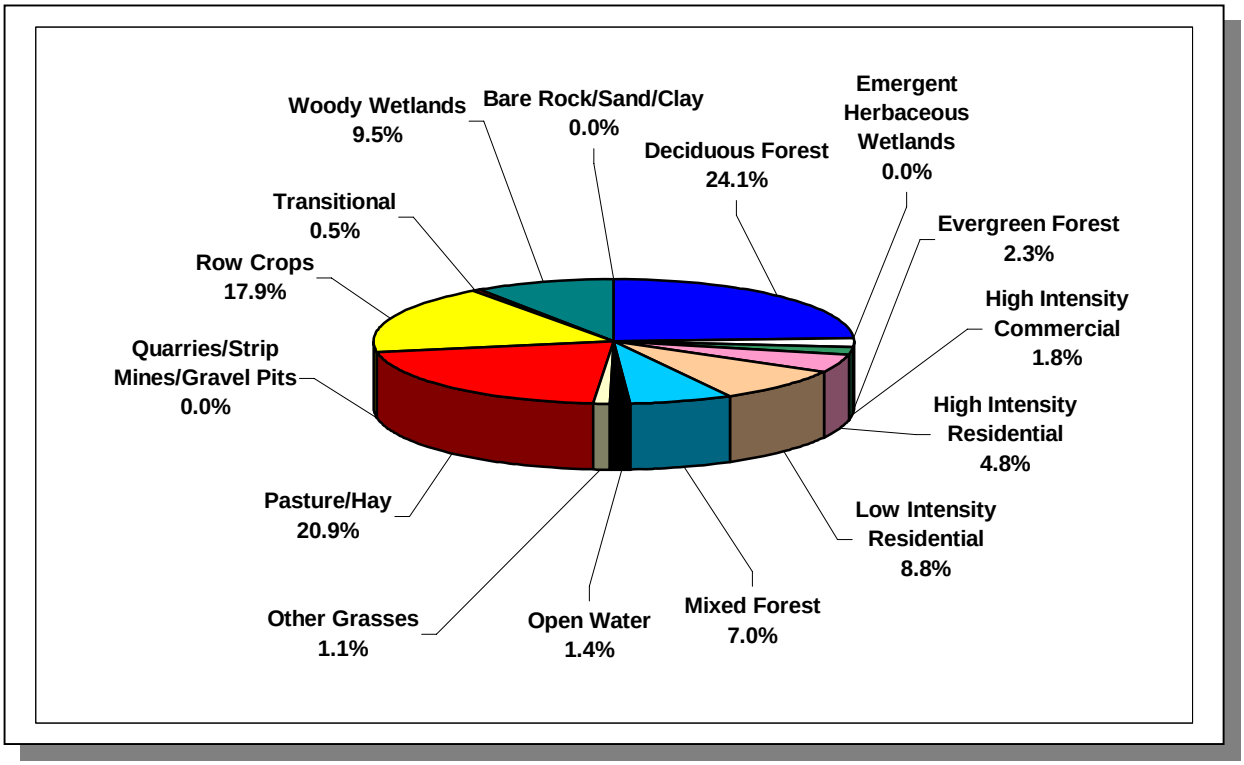

Figure 2-7. Land Use Distribution in the Tennessee Portion of the Wolf River Watershed. *More information is provided in Appendix II.*

2.5. ECOREGIONS AND REFERENCE STREAMS. Ecoregions are relatively homogeneous areas of similar geography, topography, climate and soils that support similar plant and animal life. Ecoregions serve as a spatial framework for the assessment, management, and monitoring of ecosystems and ecosystem components. Ecoregion studies can aid the selection of regional stream reference sites, identifying high quality waters, and developing ecoregion-specific chemical and biological water quality criteria.

There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee. The Tennessee portion of the Wolf River Watershed lies within 3 Level III ecoregions (Southeastern Plains, Mississippi Alluvial Plain, and Mississippi Valley Loess Plain) and contains 3 Level IV subecoregions:

- **Southeastern Plains and Hills (65e)** contain north-south trending bands of sand and clay formations. Tertiary-age sand, clay, and lignite are to the west, with Cretaceous fine sand, fossiliferous micaceous sand, and silty clays to the east. Elevations reach over 650 feet with more rolling topography and relief than the Loess Plains (74b) to the west. Streams have increased gradient, sandy substrates, and distinct faunal characteristics. Natural vegetation is oak-hickory forest, grading into oak-hickory-pine to the south.

- **Northern Mississippi Alluvial Plain (73a)** within Tennessee is a relatively flat region of the Quaternary alluvial deposits of sand, silt, clay, and gravel. It is bounded distinctly on the east by the Bluff Hills (74a), and on the west by the Mississippi River. Average elevations are 200-300 feet with little relief. Most of the region is in cropland, with isolated areas of deciduous forest. Soybeans, cotton, corn, sorghum, and vegetables are the main crops. The natural vegetation consists of Southern floodplain forest (oak, tupelo, bald cypress). The two main distinctions in the Tennessee portion of the ecoregion are between areas of loamy, silty, and sandy soils with better drainage, and areas of more clayey soils of poor drainage that may contain wooded swamp-land and oxbow lakes. Waterfowl, raptors, and migratory songbirds are relatively abundant in the region.

- **Loess Plains (74b)** are gently rolling, irregular plains, 250-500 feet in elevation, with loess up to 50 feet thick. The region is a productive agricultural area of soybeans cotton, corn, milo, and sorghum crops, along with livestock and poultry. Soil erosion can be a problem on the steeper, upland Alfisol soils. Bottom soils are mostly silty Entisols. Oak-hickory and southern floodplain forests are the natural vegetation types, although most of the forest cover has been removed for cropland. Some less-disturbed bottomland forest and cypress-gum swamp habitats still remain. Several large river systems with wide floodplains; the Obion, Forked Deer, Hatchie, Loosahatchie, and Wolf, cross the region. Streams are low-gradient and murky with silt and sand bottoms. Most of the streams have been channelized.

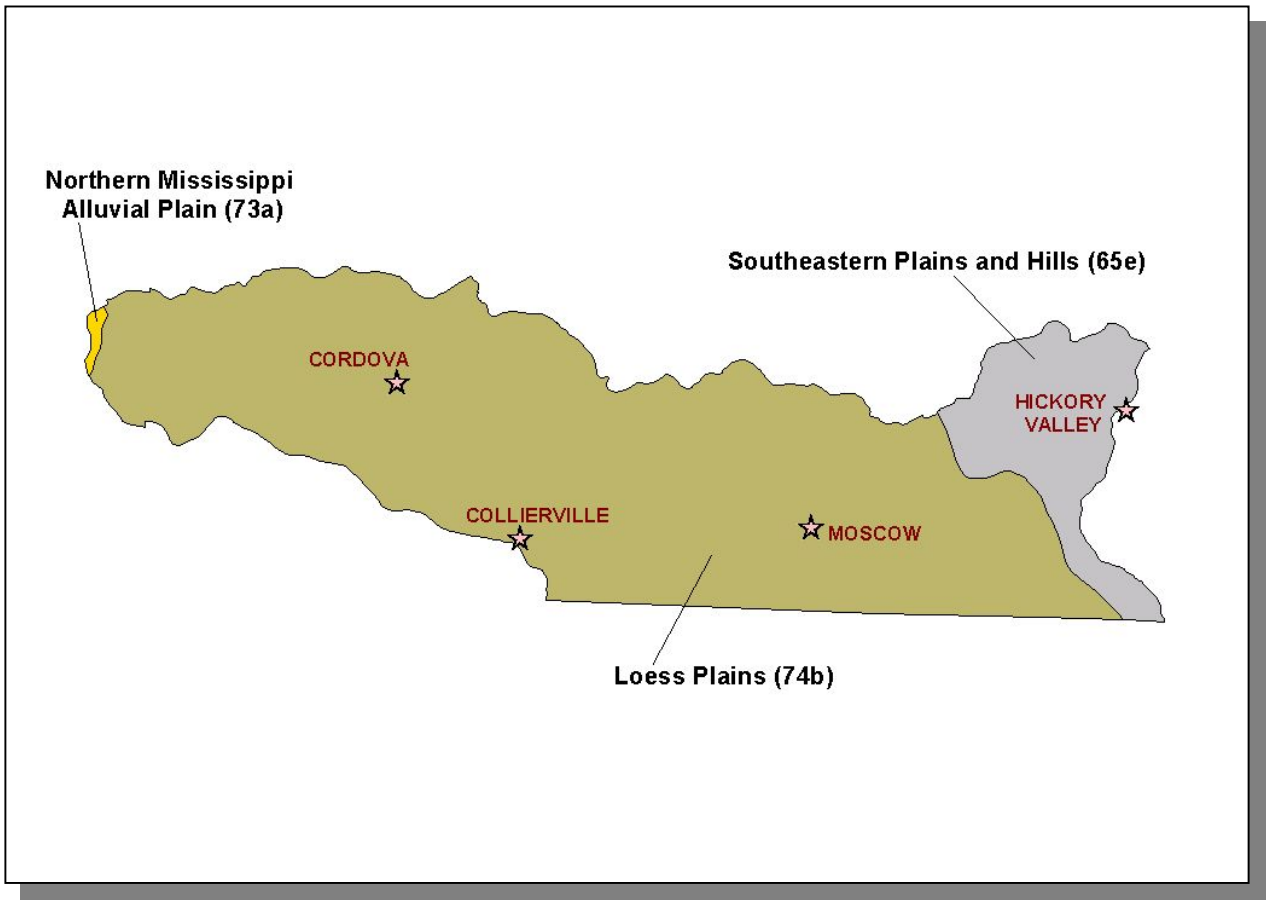

Figure 2-8. Level IV Ecoregions in the Tennessee Portion of the Wolf River Watershed. *Locations of Collierville, Cordova, Hickory Valley, and Moscow are shown for reference.*

Each Level IV Ecoregion has at least one reference stream associated with it. A reference stream represents a least impacted condition and may not be representative of a pristine condition.

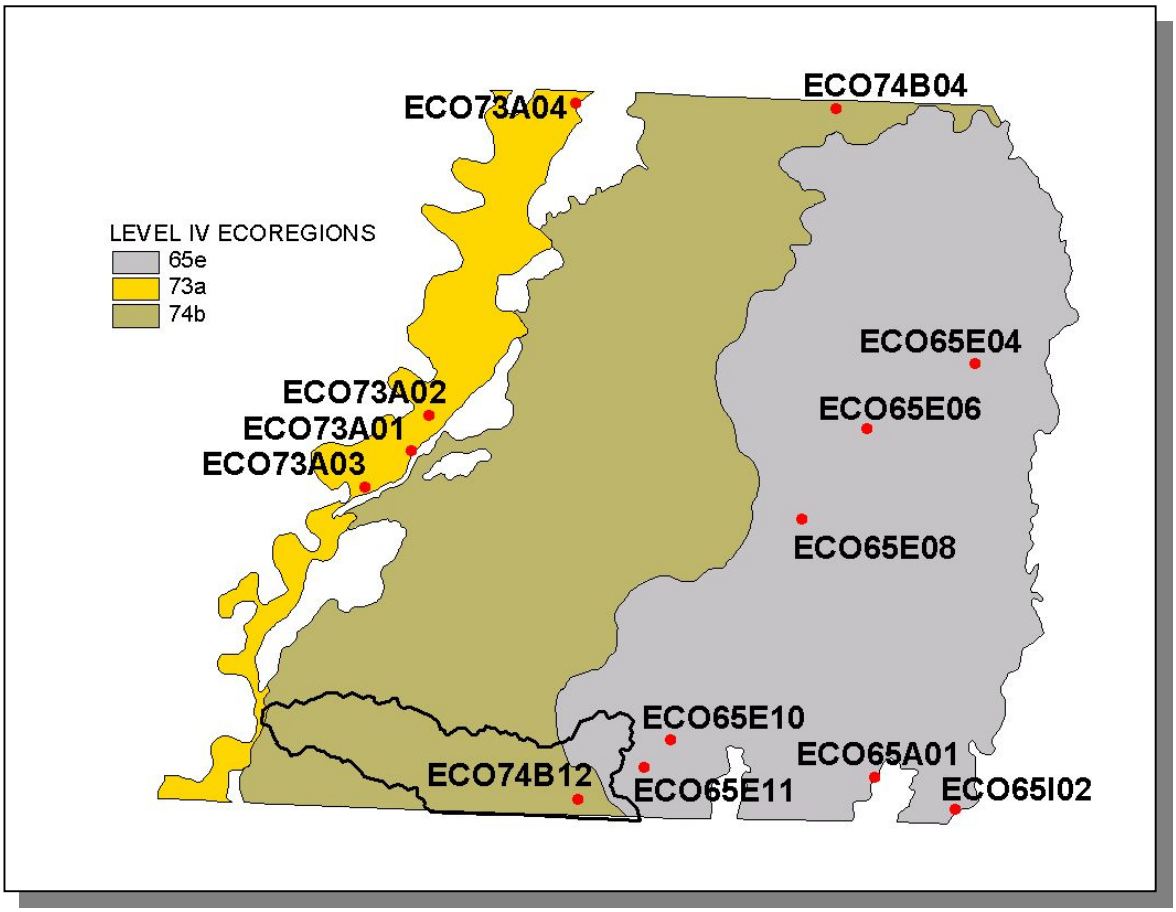

Figure 2-9. Ecoregion Monitoring Sites in Level IV Ecoregions 65e, 73a, and 74b in Tennessee. *The Tennessee portion of the Wolf River Watershed boundary is shown for reference. More information is provided in Appendix II.*

2.6. NATURAL RESOURCES.

2.6.A. Rare Plants and Animals. The Heritage Program in the TDEC Division of Natural Heritage maintains a database of rare species that is shared by partners at The Nature Conservancy, Tennessee Wildlife Resources Agency, the US Fish and Wildlife Service, and the Tennessee Valley Authority. The information is used to: 1) track the occurrence of rare species in order to accomplish the goals of site conservation planning and protection of biological diversity, 2) identify the need for, and status of, recovery plans, and 3) conduct environmental reviews in compliance with the federal Endangered Species Act.

GROUPING	NUMBER OF RARE SPECIES
Mussels	3
Amphibians	1
Birds	5
Fish	3
Mammals	2
Reptiles	1
Plants	9
Total	**24**

Table 2-3. There are 24 Known Rare Plant and Animal Species in the Tennessee Portion of the Wolf River Watershed.

In the Tennessee Portion of the Wolf River Watershed, there are 3 rare fish species and 4 rare mussel species.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Ammocrypta beani	Naked Sand Darter		D
Cycleptus elongatus	Blue Sucker	MC	T
Noturus stigmosus	Northern Madtom	MC	D
Lampsilis silquoidea	Fatmucket		
Obovaria jacksoniana	Southern Hickorynut		
Villosa vibex	Southern Rainbow		

Table 2-4. Rare Aquatic Species in the Tennessee Portion of the Wolf River Watershed. *Federal Status: LE, Listed Endangered by the U.S. Fish and Wildlife Service; MC, Management Concern for U.S. Fish and Wildlife Service. State Status: E, Listed Endangered by the Tennessee Wildlife Resources Agency; T, Listed Threatened by the Tennessee Wildlife Resources Agency; D, Deemed in Need of Management by the Tennessee Wildlife Resources Agency. More information may be found at http://www.state.tn.us/environment/nh/data.php.*

2.6.B. Wetlands. The Division of Natural Heritage maintains a database of wetland records in Tennessee. These records are a compilation of field data from wetland sites inventoried by various state and federal agencies. Maintaining this database is part of Tennessee's Wetland Strategy, which is described at:

http://www.state.tn.us/environment/nh/wetlands/

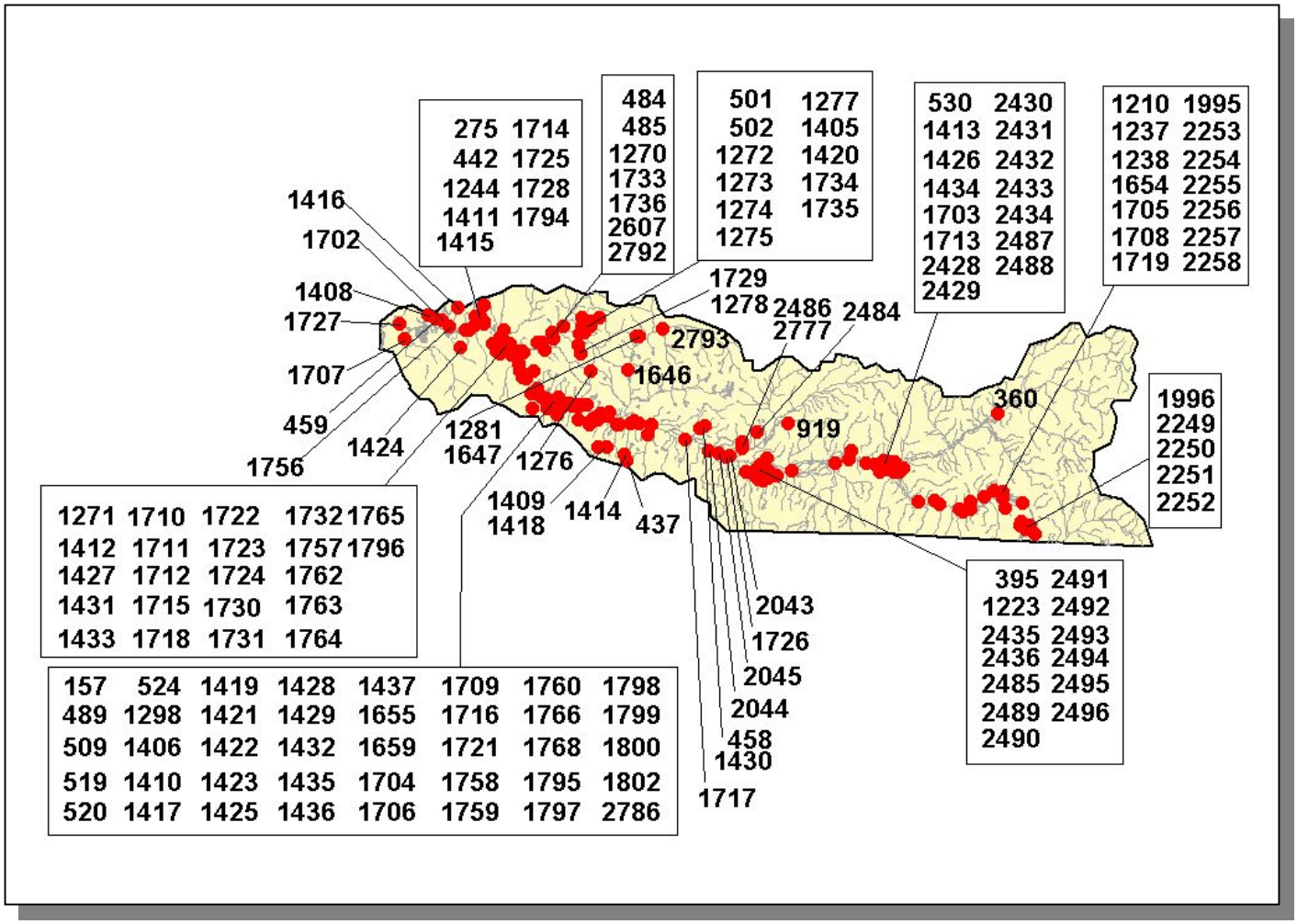

Figure 2-10. Location of Wetland Sites in TDEC Division of Natural Heritage Database in the Tennessee Portion of the Wolf River Watershed. This map represents an incomplete inventory and should not be considered a dependable indicator of the presence of wetlands*. More information is provided in Appendix II.*

2.7. CULTURAL RESOURCES.

2.7.A. Greenways. The Wolf River Watershed has at least four greenways/trails:

- Lafayette park Trail in Rossville
- Lakeland Greenway System
- Mississippi River Trail in Memphis
- Vollintine-Evergreen Trail in Memphis

More information about greenways and trails in the watershed may be found at:

http://www2.state.tn.us/tdec/GREENWAYS/tnmap.htm

2.7.B. Wildlife Management Area. The Tennessee Wildlife Resources Agency manages two wildlife management areas in the Tennessee portion of the Wolf River Watershed.

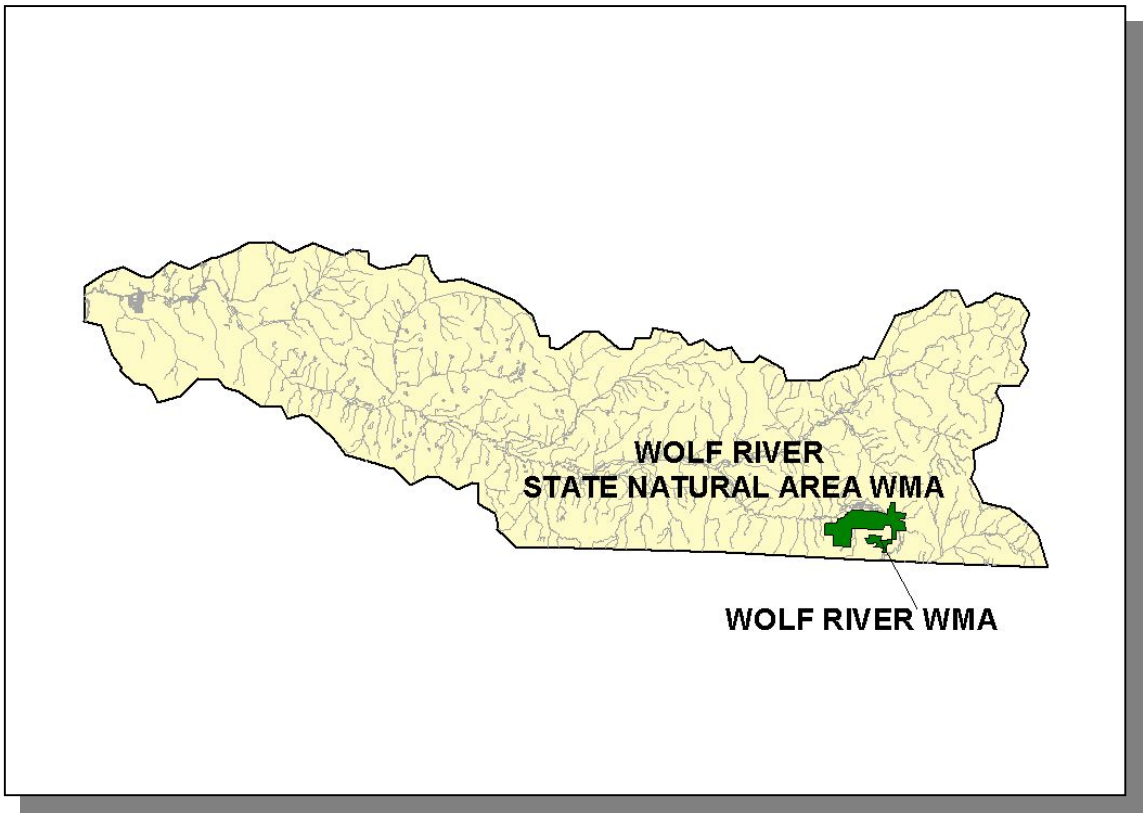

Figure 2-11. TWRA Manages Wildlife Management Areas in the Tennessee Portion of the River Watershed.

2.8. Tennessee Rivers Assessment Project. The Tennessee Rivers Assessment is part of a national program operating under the guidance of the National Park Service's Rivers and Trails Conservation Assistance Program. The Assessment is an inventory of river resources, and should not be confused with "Assessment" as defined by the Environmental Protection Agency. A more complete description can be found in the Tennessee Rivers Assessment Summary Report, which is available from the Department of Environment and Conservation and on the web at:

http://www.state.tn.us/environment/wpc/publications/riv/

STREAM	NSQ	RB	RF		STREAM	NSQ	RB	RF
Alexander Creek	3				May Creek	3		
Clear Creek	2				Mount Tena Creek	3		
Cypress Creek	4				North Fork Creek	2		
Early Grove Creek	3				North Fork Wolf River	1,3	2	
Fletcher Creek	4				Sandy Creek	3		
Golden Creek	4				Shaws Creek	3		
Grays Creek	4		2		Stout Creek	3		
Grissum Creek	3,4				Teague Branch Sandy Creek	3		
Harrison Creek	4				Unnamed Tributary to Wolf River	2	2	
Johnson Creek	3				Wolf River	1,3	2	
Marys Creek	2							

Table 2-5. Stream Scoring from the Tennessee Rivers Assessment Project in the Wolf River Watershed.

Categories: NSQ, Natural and Scenic Qualities
RB, Recreational Boating
RF, Recreational Fishing

Scores: 1. Statewide or greater Significance; Excellent Fishery
2. Regional Significance; Good Fishery
3. Local Significance; Fair Fishery
4. Not a significant Resource; Not Assessed